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Docket No.: GR 97 P 3757 **MAIL STOP: APPEAL BRIEF-PATENTS**


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By: Karl H Waedt Date: July 20, 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

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| Applic. No. | : | 09/541,722 Confirmation No.: 4809 |
| Inventor | : | Karl Waedt |
| Filed | : | April 3, 2000 |
| Title | : | Responsive System for Digital Signal Processing and Method for Operation of a Responsive System |
| TC/A.U. | : | 2124 |
| Examiner | : | William H. Wood |
| **Customer No.** | : | **24131** |

Hon. Commissioner for Patents
Alexandria, VA 22313-1450

## BRIEF ON APPEAL

S i r :

This is an appeal from the final rejection in the Office action dated January 15, 2004, finally rejecting claims 1-15.

Appellant submits this *Brief on Appeal* in triplicate, including payment in the amount of $330.00 to cover the fee for filing the *Brief on Appeal*.

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Real Party in Interest:

This application is assigned to Siemens Aktiengesellschaft of München, Germany. The assignment was recorded under Reel/Frame Nos. 013893/0810.

Related Appeals and Interferences:

No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Claims 1-15 are rejected and are under appeal. No claims were cancelled.

Status of Amendments:

No claims were amended after the final Office action. A *Response under 37 CFR § 1.116* was filed on April 15, 2004. A *Notice of Appeal* was submitted on May 17, 2004.

Summary of the Invention:

As stated in the first paragraph on page 1 of the specification of the instant application, the invention relates to a responsive system for signal processing having a plurality of data processing units which are connected to one another through a data transmission unit and on which computer

programs are implemented. The invention furthermore relates to a method for operation of a responsive system.

Appellant explained on page 10 of the specification, line 7, that, referring now in detail to the single figure of the drawing, there is seen a responsive system 1 which includes a large number of data processing units 2A to 2Z that are connected to one another through a data transmission unit 4. The data transmission unit 4 is a standardized transmission line, for example an Ethernet coaxial cable, and has standardized non-illustrated transmission elements, such as amplifiers, repeaters or bridges. The data processing units 2A to 2Z are connected through the use of the data transmission unit 4 to form a computer network. The responsive system 1 is suitable in particular for controlling and monitoring a technical system, in particular a nuclear power station.

Appellant further explained on page 10 of the specification, line 20, that each data processing unit 2A to 2Z is suitable for processing two types of messages. One type is a received message 6, which is received in a data processing unit 2A from another data processing unit 2B. The other type is a transmitted message 8, which is transmitted or sent from a data processing unit 2A to another data processing unit 2B.

In this case, each received message 6 and each transmitted message 8 has a respective message header 6A and 8A, and a respective signal part 6B and 8B.

Appellant outlined on page 11 of the specification, line 4, that, during operation of the nuclear power station, large amounts of data, in the form of control commands and status messages as well as defect messages (which will be referred to below as signals S) are transmitted between the data processing units 2A to 2Z through the data transmission unit 4. In this case, the signals S are combined to form messages. If an update status of some of the data processing units 2A to 2Z differs, according to the prior art that could lead to incompatibilities between received signals S from another data processing unit 2A and the signals S to be processed by the receiving data processing unit 2B. That would lead to instabilities in the processing of the computer programs in the receiving data processing unit 2A, 2B. Those instabilities are reliably avoided by measures described in the following text.

It is further mentioned on page 11 of the specification, line 19, that, furthermore, each data processing unit 2A to 2Z is connected to a service system 10. The service system 10 monitors the message traffic between the data processing units 2A to 2Z.

As set forth in the last paragraph on page 11 of the specification, line 23, at least one computer program SW is implemented on each data processing unit 2A to 2Z and is provided in a modular form from a number of functional modules FB. Any modification to the specification of the responsive system 1, for example signals S to be newly added or signals S to be deleted, is transmitted through the use of the service system 10 to the relevant data processing units 2A to 2Z. When such a modification to the specification occurs, on one hand, the functional modules FB on the relevant data processing units 2A to 2Z are modified and are thus matched. On the other hand, the structure or the layout of the relevant received messages 6 as well as the relevant transmitted messages 8 is modified and thus matched with regard to the new signals S or the signals S to be deleted.

It is stated on page 12 of the specification, line 12, that the responsive system 1 includes a first database 12 and a second database 14, which are each connected to the service system 10. The first database 12 contains the present specification or the respective update states of the computer programs SW, with the respective associated functional modules FB of all of the data processing units 2A to 2Z as well as the layout of the received messages 6 and of the transmitted

messages 8 of all of the data processing units 2A to 2Z. Furthermore, the first database 12 in each case stores a revision identity R for each computer program SW and for each signal S of each received message 6 and of each transmitted message 8, as the update status.

As described in the last paragraph on page 12 of the specification, line 25, the structure of the second database 14 is identical to that of the first database 12. The second database 14 likewise stores all of the computer programs SW as well as all of the signals S with the respective associated current revision identity R. Modifications to the specification or revisions of computer programs SW which now respectively need to be modified, and/or signals S to be modified are entered or recorded in the second database 14.

Appellant outlined on page 13 of the specification, line 8, that an integer is stored as a previous or current revision identity R, in both the first database 12 and the second database 14. For example, all of the signals S which are modified during a first modification to the specification, a so-called first revision, are given the revision identity R = +1. The signals S modified in the next specification modification are given the revision identity R = +2, that is to say a revision identity R incremented by the value 1. The

signals S deleted in the second modification are given the revision identity R = -2, in which case the negative mathematical sign indicates that the signal S has been deleted. Signals S or computer programs SW to be newly added are attached to the end of the message and to the second database 14, in which case these signals S are given a positive revision identity R. An analogous procedure is used for every other specification modification or revision. That is to say, the number R = +4 or R = -4 is given to the modified signals S as the revision identity R for a fourth specification modification.

Appellant explained on page 14 of the specification, line 2, that, once they have been entered in the second database 14 through the use of the service system 10, the specification modifications are transmitted to the relevant data processing units 2A to 2Z. A deleted signal S is not deleted in all of the received messages 6 and transmitted messages 8 until the computer program SW in all of the data processing units 2A to 2Z has been updated. This ensures that the modifications in the computer programs SW of all of the relevant data processing units 2A to 2Z have also actually been implemented.

It is further stated on page 14 of the specification, line 12, that, after the updating of all of the relevant data

processing units 2A to 2Z, all of the relevant received messages 6 and all of the relevant transmitted messages 8 in accordance with the revision being carried out, the updated specification is transferred to the first database 12, through the use of the service system 10.

As outlined in the last paragraph on page 14 of the specification, line 19, subsequent specification modifications or revisions are once again firstly stored in the second database 14. In other words, if the contents of the first database 12 are identical to the contents of the second database 14, all of the data processing units 2A to 2Z are matched to the same specification.

Appellant explained on page 15 of the specification, line 1, that, in order to avoid a failure of a data processing unit 2A to 2Z which, for example, have not yet been updated, each data processing unit 2A to 2Z also includes an analysis module 16. During operation, the analysis module 16 checks the correctness of each signal S contained in the received message 6 from another data processing unit 2A to 2Z, using the revision identity R stored in the receiving data processing unit 2A to 2Z, and the associated current revision identity R. This check during operation is explained in more detail in the following text:

It is also stated on page 15 of the specification, line 12, that, for checking purposes, the corresponding specification of the associated data processing unit 2A to 2Z, that is to say the previous revision identities R or the revision identities R on which a current change is based, of the respective computer programs SW and of the signals S, is stored in the respective analysis module 16. The data processing unit 2B, which transmits a transmitted message 8 to another data processing unit 2A, in each case assigns to each signal S being produced and to be transmitted the revision identity R characterizing its update status.

As set forth in the last paragraph on page 15 of the specification, line 23, this transmitted message 8 is received by the other data processing unit 2A as the received message 6. The receiving data processing unit 2A then uses the analysis module 16 to compare for a match between the revision identity R characterizing the signal S, and the revision identity R stored for this signal S. If the received revision identity R matches the stored revision identity R', that is to say if the specifications of the two communicating data processing units 2A, 2B match, the signal S is given the status information item "Status = ok", and is passed on for signal processing in accordance with the computer program SW.

If they do not match, the signal S is given the status information item "Status = Error", and is not processed.

Appellant set forth on page 16 of the specification, line 11, that the analysis module 16 is updated with regard to a new specification by the specification modification transmitted to the associated data processing unit 2A to 2Z through the use of the service system 10. In this case, the previous revision identities R (stored in the analysis module 16) of the signals S and/or of the computer programs SW are replaced by the current revision identities R.

Appellant further stated on page 16 of the specification, line 19, that the advantages achieved by the invention are, in particular, that consistent and transparent operation is ensured through the use of the comparison of the revision identities R, even after specification modifications in the individual data processing units 2A to 2Z. The responsive system 1 for digital signal processing is thus particularly suitable for incremental maintenance.

References Cited:

U.S. Patent No. 5,421,017 (Scholz, et al.), dated May 30, 1995; and

U.S. Patent No. 5,619,716 (Nonaka, et al.), dated April 8, 1997.

Issues

1. Whether or not claims 1, 2, 4, 5, and 15 are anticipated by U.S. Patent No. 5,421,017 to *Scholz, et al.* (hereinafter **SCHOLZ**) under 35 U.S.C. §102(a,b).

2. Whether or not claims 3, 6-14 are obvious over **SCHOLZ** in view of U.S. Patent No. 5,619,716 to *Nonaka et al.* (hereinafter **NONAKA**) under 35 U.S.C. §103(a).

3. Whether or not the references **SCHOLZ** and **NONAKA** can be properly combined under 35 U.S.C. §103(a).

Grouping of Claims:

Claims 1 and 5 are independent. Claims 2-4 depend on claim 1. Claims 6-15 depend on claim 5. The patentability of independent claims 1 and 5 are separately argued. Therefore, claims 2-4 stand or fall with claim 1 but claims 5-15 do not stand or fall with claim 1. Moreover, claims 6-15 stand or fall with claim 5, but claims 1-4 do not stand or fall with claim 5.

It will be understood that this grouping of the claims applies to this Appeal Brief only. Appellant does not concede or give

up his right to further pursue the subject matter of the dependent claims or additional subject matter contained in the specification. The simplified grouping is provided in an effort to simplify the issues before the Board and to expedite the appeal.

Arguments:

In light of the grouping of the claims indicated above, it will only be necessary to address issue 1 individually, while issues 2 and 3 will be addressed together. If the honorable Board should find in favor of the appellant with regard to issue 1, then issues 2 and 3 could also be reversed.

Issue 1:

Regarding the first issue, it is respectfully asserted that the present invention is not anticipated by **SCHOLZ**. The present invention assigns signal specific revision identification to signals produced by a plurality of data processing units. Thus, the present invention assigns a "revision identity to a signal" which is not found in **SCHOLZ** that employs a version identifier to indicate the version of the addressed software unit to the operating system.

The **SCHOLZ** reference discloses a real time control system and method for replacing software during operation in a controlled

system. **SCHOLZ** is directed to maintaining comparable revision status in computer **components or modules**, not to individual signals as claimed in claims 1, 5, and 15 of the instant application. In fact, the section identified by the Examiner on page 4 of the above-identified Office Action (col. 4, lines 1-8) only indicates that for an event, such as a subscriber picking up a telephone receiver, a stream of data associated with the event "are provided with a version identifier UT" that is used to collect the related data. **SCHOLZ** clarifies that "whether the actions or communications following an event of this event type are to be implemented [by] the new software or the old software is determined by the version identified in the sequential messages" (Col 4, 13-16). More importantly, **SCHOLZ** expressly states that the version identifiers refer to the "event sources" and not to the individual signals. (see e.g., col. 4, lines 1-16). In contrast, the present case assigns "a revision identity **to a signal** produced by said data processing unit" so that programs within the signals may be selectively performed.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). In the present case, **SCHOLZ** does not

show "assigning a revision identity **to a signal** produced by said data processing unit" as recited in claim 1 of the instant application. Nor does **SCHOLZ** show "performing a comparison to determine if the revision identity characterizing **the received signal** matches a revision identity stored **for that signal**" as recited in claim 1 of the instant application. Moreover, **SCHOLZ** does not show "producing a signal with one of the data processing units, and **assigning a revision identity to the signal** characterizing an update status of the signal, for each communication" as recited in claim 5 of the instant application. Furthermore, **SCHOLZ** does not teach or suggest determining "if the revision identity characterizing **the received signal** matches a revision identity stored **for that signal**" as recited in claim 5.

Claims 1, 2, 4, 5, and 15 are not anticipated by **SCHOLZ** and the honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

Issues 2 and 3:

Regarding the second and third issues, it is respectfully asserted that the present invention is not obvious in view of the cited references. Moreover, even if the honorable Board determines that all of the claim elements are individually present in some form in either **SCHOLZ** or **NONAKA**, appellant

respectfully asserts that there is no motivation provided in the references **SCHOLZ** and **NONAKA** to make the proposed combination

As previously indicated, the present invention assigns a revision identity to each signal. More specifically, the revision identity for the signal helps characterize the update status of the signal. Thus, the present invention uses revision identity assigned to a signal, which is not found in **SCHOLZ** and **NONAKA**. In fact, **SCHOLZ** teaches away from the present invention by showing a version identifier that "indicates the version of the addressed software unit to the operating system" instead of a signal as indicated in the claims of the instant application.

In component-based systems, such as those systems described in **SCHOLZ** and **NONAKA**, it is often necessary to update software on machines or components within the information processing system. Typically, the entire module or component must be upgraded or replaced before communication can be established again between system modules on the server and client machines. Unfortunately, communication between modules is completely suppressed if no compatibility with regard to identity can be determined. As such, the communications between the components or modules often come to a halt so that

the component or module versions may be updated to ensure reliable processing within the system. In contrast, the instant application does not suppress all communication between two modules or components, but if necessary, may provide signal specific suppression of individual signals.

The **NONAKA** reference discloses an information processing system in which the version of a redirector stored in a client machine is transmitted, upon starting a redirector program, to a configuration management program stored in a server machine. When the version update on the server is newer, an update request and the new redirector is sent to the client machine to update the redirector. As can be seen the "update" or "version" teachings of **NONAKA** are limited to the "redirector" or program, and there is no discussion of assigning a "revision identity to a signal produced" by the client machine of **NONAKA**. This difference is explicitly recited in col.3, lines 48 to 56 of **NONAKA** which states, "comparing means for comparing version **of the program stored** in the second storage means . . ." (emphasis added).

Information processing systems similar to that described in **NONAKA** and **SCHOLZ** are directed to maintaining comparable revision status in computer components or modules, not to individual signals as in the instant application. In these

component-based systems, it is often necessary to update the entire module or component before communication can be established between modules on the server and client machine. Unfortunately, communication between modules is completely suppressed if no compatibility with regard to identity can be determined. As such, the communications between the components or modules often come to a halt so that the component or module versions may be updated to ensure reliable processing within the system. In contrast, the instant application does not suppress all communication between two modules or components, but if necessary, may provide signal specific suppression of individual signals.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The initial burden is on the Examiner to provide some suggestion of the desirability of doing what is described in the present invention. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). Unfortunately, in the instant case, the Examiner has merely presented examples of two configurations that use a form of version identifier to identify system components.

The ultimate determination of patentability is based on the entire record, by a preponderance of evidence, with due consideration to the persuasiveness of any arguments and any secondary evidence. *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

With regard to obviousness, as mentioned above, three basic criteria must be met before a *prima facie* case of obviousness exists. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Appellant submits that the Examiner has failed in all three criteria. As previously indicated, the present invention assigns "a revision identity to a signal" to characterize the update status of a particular signal.

As neither **SCHOLZ** nor **NONAKA** "assign a revision identity to a signal," claims 3 and 6-14 are not obvious and the honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

There is no motivation provided in the references **SCHOLZ** and **NONAKA** to make the proposed combination. Moreover, based on the disclosures in **SCHOLZ** and **NONAKA**, it is clear that the formation of such combinations would require impermissible hindsight on the part of the Examiner.

As previously indicated, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

When the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper. *Ex parte Skinner*, 2 USPQ2d 1788 (Bd. Pat. App. & Inter. 1986).

The present invention claims the feature "assigning a revision identity to a signal" in claims 1 and 5. This feature is not shown or suggested in the **SCHOLZ** and **NONAKA** references, whether taken individually or in any combination.

The honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

Respectfully submitted,

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Appendix - Appealed Claims

1. A responsive system for digital signal processing, comprising:

a data transmission unit; and

a plurality of data processing units communicating with one another through said data transmission unit, said data processing units implementing at least one computer program dependent on a respective update status, the system being configured as follows:

a) each of said data processing units, during each communication, assigning a revision identity to a signal produced by said data processing unit to characterize said respective update status of said signal;

b) one of said data processing units receiving the signal, performing a comparison to determine if the revision identity characterizing the received signal matches a revision identity stored for that signal; and

c) said one of said data processing units receiving the signal, performing said at least one computer program on the signal upon matching the received revision identity

with the stored revision identity and otherwise not performing said at least one computer program on the signal.

2. The responsive system according to claim 1, wherein each of said data processing units has an analysis module for carrying out the comparison.

3. The responsive system according to claim 1, including a first database storing the respective update status of at least one of the signals and the computer programs of all of said data processing units, and a second database storing at least one of future modifications or revisions of respective signals to be modified and respective computer programs to be modified.

4. The responsive system according to claim 1, including a service system for updating at least one of the computer programs and the signals of said data processing units.

5. A method for operation of a responsive system for digital signal processing, which comprises:

a) providing a data transmission unit;

b) providing a plurality of data processing units communicating with one another through the data transmission unit;

c) implementing at least one computer program depending on a respective update status in the data processing units;

d) producing a signal with one of the data processing units, and assigning a revision identity to the signal characterizing an update status of the signal, for each communication; and

e) carrying out a comparison in one of the data processing units receiving a signal to determine if the revision identity characterizing the received signal matches a revision identity stored for that signal.

6. The method according to claim 5, which further comprises storing the stored revision identity in an analysis module in the data processing unit receiving the signal and in a database.

7. The method according to claim 5, which further comprises storing the stored revision identity in a database.

8. The method according to claim 5, which further comprises storing the stored revision identity in an analysis module in the data processing unit receiving the signal.

9. The method according to claim 6, which further comprises incrementing the revision identity characterizing the signal and the revision identity stored for the signal by a value of one for a revision relating to that signal.

10. The method according to claim 7, which further comprises incrementing the revision identity characterizing the signal and the revision identity stored for the signal by a value of one for a revision relating to that signal.

11. The method according to claim 8, which further comprises incrementing the revision identity characterizing the signal and the revision identity stored for the signal by a value of one for a revision relating to the signal.

12. The method according to claim 6, which further comprises providing the revision identity characterizing the signal, and the revision identity stored for the signal, with a negative mathematical sign when the signal is removed.

13. The method according to claim 7, which further comprises providing the revision identity characterizing the signal, and the revision identity stored for the signal, with a negative mathematical sign when the signal is removed.

14. The method according to claim 8, which further comprises providing the revision identity characterizing the signal, and the revision identity stored for the signal, with a negative mathematical sign when the signal is removed.

15. The method according to claim 5, wherein implementing at least one computer program depending on a respective update status includes processing the received signal if the revision identities of the received signal and stored signal match and otherwise not processing the received signal.